Examrace

Environmental Science: Numerical Questions – Noise Change Wrt Distance

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Type I – Point Source

1. A point source of noise produces a sound of 60 dB at a distance of 10 m from it. If the sound is measured at a distance of 40 m, what will be its value?

1. 48 dB
2. 54 dB
3. 57 dB
4. 44 dB ′

Answer: (A) 48 dB

Explanation: $L_2 = L_1$ - 20 Log $\left(\frac{d_2}{d_1}\right)$

Where,

L_2 - Sound at point 2

L_1 – Sound at point 1

d_2 d_1 – Distance

$L_2 = 60$ - 20 Log $\left(\frac{40}{10}\right)$

$L_2 = 60$ - 20 Log 4

$L_2 = 60 - 20 * 0.60$

$L_2 = 60 - 12$

$L_2 = 48$ dB

2. A point source of sound produces a noise of 70 dB at a distance of 20 m from it. What will be the noise level at 80 m from it?

1. 35 dB
2. 64 dB
3. 58 dB

4. 52 dB

Answer: (C) 58 dB

Explanation: $L_2 = L_1$ - 20 Log $\left(\frac{d_2}{d_1}\right)$

Where,

L_2 - Sound at point

L_1 – Sound at point 1

d_2 d_1 – Distance

$L_2 = 70$ - 20 Log $\left(\frac{80}{20}\right)$

$L_2 = 70$ - 20 Log 4

$L_2 = 70 - 20 * 0.60$

$L_2 = 70 - 12$

$L_2 = 58$ dB

Type II – Line Source

3. A road carrying heavy traffic has an average noise level of 90 dB when measured at a distance of 10 metres. What would be the noise level at 20 metres distance?

1. 87 dB
2. 84 dB
3. 60 dB
4. 45 dB

Answer: (A) 87 dB

Explanation: $L_2 = L_1$ - 10 Log $\left(\frac{d_2}{d_1}\right)$

Where,

L_2 - Sound at point 2

L_1 – Sound at point 1

d_2 d_1 – Distance

$L_2 = 90$ - 10 Log $\left(\frac{20}{10}\right)$

L_2 = 90 - 10 Log 2

$L_2 = 90 - 10 * 0.3$

$L_2 = 90 - 3$

L_2 = 87 dB

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